

Appl. No. 10/709,444
Amdt. dated July 11, 2005
Reply to Office action of April 20, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 **Listing of Claims:**

Claim 1 (currently amended): A method for fabricating a bottle-shaped deep trench comprising:

providing a substrate having a pad layer thereon;

10 etching the pad layer and the substrate to form a deep trench, the deep trench having a sidewall and a bottom surface;

15 performing an atomic layer deposition (ALD) process to form a nonmetal layer on the pad layer and on an upper portion of the sidewall of the deep trench, the nonmetal layer formed on the sidewall of the deep trench directly contacting the upper portion of the sidewall of the deep trench; and

performing an isotropic etching process by taking the nonmetal layer as a hard mask to remove a portion of the sidewall and the bottom surface of the deep trench not covered by the nonmetal layer so as to form a bottle-shaped deep trench.

20 Claim 2 (original): The method of claim 1, wherein the ALD process is performed in a low-pressure chemical vapor deposition (LPCVD) chamber.

Claim 3 (original): The method of claim 1, wherein the nonmetal layer is formed with a plurality of ALD processes.

25

Claim 4 (original): The method of claim 1, wherein the nonmetal layer is an ALD nitride layer or an ALD oxide layer.

Appl. No. 10/709,444
Amdt. dated July 11, 2005
Reply to Office action of April 20, 2005

Claim 5 (original): The method of claim 1, wherein the isotropic etching process is a wet-etching process.

5 Claim 6 (original): The method of claim 5, wherein a wet-etching agent of the wet etching process is ammonia water (NH₄OH).

10 Claim 7 (previously presented): The method of claim 1, wherein the method further comprises a step of removing the nonmetal layer after forming the bottle-shaped deep trench.

Claim 8 (canceled)

15